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ABSTRACT

One hundred fifty-nine members of pupil placement teams participated in an examination of the extent to which sex, socioeconomic status, physical appearance, and nature of referral problem biased the psychoeducational assessment and decision making process for children with suspected handicapping conditions. Ss were assigned to 16 conditions in a computer simulated decision making exercise. Test usage was consistent across conditions. Only the nature of the referral problem influenced outcome decisions. Although test results indicated average behavior, decision makers classified students referred for "behavior problems" as emotionally disturbed significantly more often than any other classification. Decision makers perceived scores on intelligence tests, achievement tests, and the disparity between the two as most influential on their decisions. Personality test scores and behavior rating data were seen as having a greater influence on outcome decisions when the student demonstrated behavior problems. Decision makers perceived naturally occurring pupil characteristics as differentially influencing their decisions. (Author/CL)

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University of Minnesota

Research Report No. 17

THE INFLUENCE OF TEST SCORES AND NATURALLY-OCCURRING PUPIL CHARACTERISTICS ON PSYCHOEDUCATIONAL DECISION MAKING WITH CHILDREN

James Ysseldyke, Bob Algozzine, Richard Regan, Matthew McGue

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I. Adequacy of Norm-Referenced Data for Prediction of Success

II. Computer Simulation Research on the Assessment/Decision-making/Intervention Process

III. Comparative Research on Children Labeled LD and Children Failing Academically but not Labeled LD

IV. Surveys on In-the-Field Assessment, Decision Making, and Intervention

V. Ethological Research on Placement Team Decision Making

VI. Bias Following Assessment

VII. Reliability and Validity of Formative Evaluation Procedures

VIII. Data-Utilization Systems in Instructional Programming

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December, 1979

Abstract

This study examined the extent to which sex, socioeconomic status, physical appearance, and nature of referral problem of a referred child biased the psychoeducational assessment and decision-making process and its outcomes. A total of 159 members of pupil placement teams were assigned to 16 conditions in a computer-simulated decision-making exercise. Test usage was consistent across conditions. Only the nature of the referral problem influenced outcome decisions. Although test results indicated average behavior, decision makers classified students referred for "behavior problems" as emotionally disturbed significantly more often than any other classification. Decision makers perceived scores on intelligence tests, achievement tests, and the disparity between the two as most influential on their decisions. Personality test scores and behavior rating data were seen as having a greater influence on outcome decisions when the student demonstrated behavior problems. Decision makers perceived naturally-occurring pupil characteristics as differentially influencing their decisions.

The Influence of Test Scores and Naturally-Occurring Pupil Characteristics in Psychoeducational Decision Making

School personnel regularly must decide who, among those students experiencing academic and behavioral difficulties, should be declared eligible for and receive special education services. Considerable time and effort go into the collection of data for decision making and in the actual deliberations that lead to decisions. Yet, little is known about the extent to which specific kinds of data influence the decision-making process and its outcomes.

Professionals charged with the task of making psychoeducational decisions about students routinely administer standardized tests or use the results of pupil performance on these tests during the decision-making process. Test data are collected to facilitate the making of decisions related to screening, eligibility/classification/identification/placement, intervention, and evaluation (Salvia & Ysseldyke, 1978). Apparently, test data are collected because someone believes they are important to and useful in decision making. While a number of investigators have reported the frequency with which various kinds of tests are used in practice (Levine, 1974; Santamaria, 1975; Silverstein, 1963; Thurlow & Ysseldyke, in press), no investigations specifically report the kinds of tests used by different practitioners with the same referred students, and no data exist on the extent to which decision makers perceive different kinds of test information as influencing the decisions they make.

Considerable data do exist which demonstrate that both professional-student interpersonal interactions and the assessment process are differentially affected by naturally occurring pupil characteristics (e.g., race,

sex, socioeconomic status, physical attractiveness, etc.). For example, it has been demonstrated that teachers interact differently with black and white students (Coates, 1972, Rubovits & Maehr, 1973), and with girls and boys (Meyer & Thompson, 1956). It has also been reported that pupils' sex differentially affects the kinds of academic and social difficulties decision makers expect students to demonstrate (Algozzine & Ysseldyke, in press; Schlosser & Algozzine, 1979). Jackson and Lahaderne (1967) showed that pupil socioeconomic status differentially affects teacher-pupil interactions, while several investigators (Algozzine, 1975; Berscheid & Walster, 1974; Ross & Salvia, 1975) demonstrated that a pupil's physical attractiveness differentially affects both interactions and diagnostic outcomes.

This investigation was designed to ascertain: (a) the extent to which the assessment process differs as a function of differences in referral information on a student (i.e., diagnostic personnel actually use different kinds of assessment information), (b) the extent to which different naturally-occurring pupil characteristics influence the outcome decisions reached by diagnostic personnel, (c) the extent to which decision makers perceived different kinds of assessment information as influencing their outcome decisions, and (d) the extent to which decision makers perceived naturally-occurring pupil characteristics as influencing their outcome decisions. The following specific research questions were addressed:

1. What specific kinds of assessment data are used as a function of referral information (pupil sex, SES, appearance, and type of problem)?

2. To what extent do specific pupil characteristics (pupil sex, SES, physical appearance, type of problem) bias outcome decisions?
3. To what extent do decision makers perceive different kinds of assessment data as influencing their decisions?
4. To what extent do decision makers perceive naturally-occurring characteristics as influencing their decisions?

Method

Subjects

Subjects were 159 educators and school psychologists in Minnesota who participated in a computer simulated decision-making program. All participants were professionals who had previously participated in at least two placement team meetings. Subjects represented a broad spectrum of disciplines and experience in providing both direct and indirect services in educational settings, and included 22 school psychologists, 44 special education teachers, 52 regular education teachers, 13 administrators, and 13 support personnel (counselors, nurses, social workers, etc.).

Procedure

Each subject was asked to read a case folder description of a child and then participate in a diagnostic simulation program developed specifically for this research. The program permitted the subject to access information from an archive containing the results of a variety of assessment devices. Specifically, scores were available for intelligence, achievement, perceptual-motor, personality, and language tests; performance on adaptive behavior scales and the results of several forms

of behavioral observation or behavior checklists were also included in the archive. The subject was allowed to select specific tests (e.g., WISC-R, ITPA, etc.) from the seven domains until he/she indicated readiness to make a diagnostic decision; the program then presented a series of decision questions. Regardless of the specific devices selected, the simulation program consistently provided the participants with data indicating that test performance was within the average range. The entire sequence of activities required approximately 45 minutes to complete and each subject was paid $10 for participating.

Referral Conditions

Prior to receiving the initial case description, each subject was randomly assigned to one of sixteen treatment conditions. The sex, socio-economic status, type of referral problem, and attractiveness of the child described in the case description were varied in the 16 conditions. The child's name was listed as Phyllis or William, and the problem was said to be either academic or behavioral in nature. In eight of the 16 conditions, the referral folder contained information indicating that the student's father was a bank vice president while the mother was a realtor (high SES condition); in the other eight conditions, the student's father was a bank janitor, and the mother was employed as a check-out clerk at a local supermarket (low SES condition). Additionally, previously judged photographs were attached to the case folders to produce an "attractive" or "unattractive" child.

Dependent Variables. After reviewing the case folder and accessing the desired assessment information, each subject answered a series of

questions. All were in Likert scale format and asked the participant three diagnostic questions (e.g., to what extent do you believe the referred student is learning disabled?), three prognostic questions (e.g., to what extent do you believe the referred student will have difficulty acquiring math skills?), questions asking them to rate the perceived influence of different kinds of scores (e.g., to what extent did the pupil's scores on intelligence tests influence your decision?), and questions asking them to rate the perceived influence of pupil characteristics (e.g., to what extent did the pupil's sex influence your decision?).

Data Analysis

The computer simulation program recorded each of the specific tests used by each participant, and the data were treated descriptively.

The effects of naturally-occurring pupil characteristics (sex, SES, appearance, and nature of presenting problem) on diagnostic and prognostic decisions were analyzed using two separate four-factor (2X2X2X2) multivariate analyses of variance (MANOVA). Significant multivariate effects were subjected to univariate analyses for each dependent variable as appropriate; any further effects were analyzed using *t* tests.

Research questions on the perceived influence of assessment data and naturally-occurring characteristics on decisions were addressed by multivariate profile analyses (Morrison, 1976).

Results

The simulation program recorded the tests used by each participant. These are listed by referral condition in Table 1. In 14 of the 16 conditions, achievement tests were the most frequently used assessment devices.

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Insert Table 1 about here

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The second research question concerned the extent to which specific naturally-occurring pupil characteristics biased outcome decisions. MANOVAs were run separately for the two outcome variables, diagnosis and prognosis. The MANOVA for diagnosis yielded one significant effect; the Wilk's Lambda for type of problem was significant ($p < .02$) and suggested that the multivariate centroids differed for the child referred for academic or behavioral problems. Univariate follow-up analyses yielded significant main effects only for the diagnostic decision of emotional disturbance. The case study child was more likely to be rated as disturbed when the presenting problem was behavioral ($\bar{X} = 3.2$) than when it was academic in nature ($\bar{X} = 3.8$).

Visual inspection of the data indicated differences existed in participants' ratings of the extent to which the child was ED, LD, or MR. A comparison of the overall means for each conditions suggested that subjects rated the child as likely to be learning disabled ($\bar{X} = 2.2$), very unlikely to be mentally retarded ($\bar{X} = 4.8$), and unlikely to be emotionally disturbed ($\bar{X} = 3.5$).

The MANOVA for prognosis yielded one significant effect; the Wilk's Lambda for type of problem was significant ($p < .01$) and suggested that the multivariate centroids differed for the child referred for academic or behavioral problems. Univariate follow-up analyses yielded significant main effects only for the prognosis of math difficulty. The child was predicted to have significantly more math difficulties if the reason for referral was academic ($\bar{X} = 2.6$) than if the problem was behavioral ($\bar{X} = 2.1$).

A profile analysis was used to examine the extent to which decision makers perceived different kinds of assessment data as influencing their outcome decisions (research question three). Sex, SES, appearance, and referral problem were treated as independent variables, with dependent variables being Likert ratings on the perceived usefulness of scores on intelligence, achievement, perceptual-motor, adaptive behavior, personality, and language tests, ability-achievement discrepancies, and subtest discrepancies. Table 2 lists the obtained means for the perceived influence of each of the nine sources of information by referral condition.

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Insert Table 2 about here

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An ANOVA was conducted to look at the extent to which there were main effects for types of assessment data perceived as influential as a function of the different kinds of referral information. Results revealed no main effects for sex, SES, problem statement, or appearance.

The parallelism of plots was examined to look at the extent to which there were interactions between the referral information and the specific kinds of data perceived as useful. The Wilk's Lambda for problem statement was significant; post hoc analysis revealed that data on personality and behavior recordings were seen as more influential in conditions in which the student was referred for behavior problems.

The plot of means for the perceived influence of different kinds of information is reproduced in Figure 1. Inspection reveals that scores on measures of personality and behavior recordings were perceived as having essentially a neutral effect (neither significant nor insignificant effect) when students were referred for academic problems. In those

instances where the student was referred for behavioral problems, data from personality tests and behavior recordings were perceived as having greater influence on decision making, though the data still were not perceived as having a significant influence. The ratings were different, though in the neutral range.

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Insert Figure 1 about here

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A third analysis relative to research question three examined the extent to which there were differences in the specific kinds of data that were perceived as useful across the conditions. The obtained T^2 was significant ($p < .00001$), indicating that three kinds of data (scores on achievement tests, scores on intelligence tests, and the ability-achievement discrepancy) were perceived as significantly more influential than other kinds of data.

The fourth research question concerned the extent to which naturally-occurring pupil characteristics were perceived as having in influence on the decisions made. Means for each of the conditions are listed in Table 3.

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Insert Table 3 about here

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The results of an ANOVA used to examine main effects are summarized in Table 4. A significant main effect was obtained for SES; post hoc analysis indicated that SES was rated as having significantly less perceived influence when the student was low SES than when he or she was high SES ($\bar{X} = 4.08$ v 3.67; $t = 2.35$, $p < .01$).

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Insert Table 4 about here

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A profile analysis was conducted to examine the extent to which the profiles of means were parallel for the different referral conditions. The means are graphically displayed in Figure 2. MANOVA results, summarized in Table 5, revealed that the Wilk's Lambda for problem statement was significant ($p < .04$). Post hoc analysis revealed that the departure from parallelism could be attributed to the general downplay of appearance in the academic condition in contrast to the relatively greater importance attributed to other variables in this condition.

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Insert Table 5 and Figure 2 about here

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A final analysis for research question four involved an examination of the extent to which the mean ratings for perceived influence of the naturally occurring characteristics differed over all conditions combined. Analysis via the T^2 statistic indicated that the means were not equal ($p < .00001$). Post hoc analysis revealed that problem statement was perceived as significantly more influential than SES, sex, or attractiveness. Further, SES and attractiveness were perceived as significantly more influential than sex.

Discussion

Data collected in assessment should be functionally useful in educational decision making. In this investigation educational decision makers were presented referral information varied only in terms of the child's sex, socioeconomic status, physical appearance, and type

of referral problem. They were given an opportunity to select specific kinds of assessment data (all of which indicated pupil performance and behavior within the average range), were asked to make diagnostic and prognostic decisions, and were asked to report the extent to which specific kinds of test data and naturally occurring pupil information influenced their decisions.

Decision makers did not use different kinds of tests as a function of the sex, socioeconomic status, physical attractiveness, or reason for referral. Rather, across conditions, achievement tests were used most often.

Referral information did affect the outcome decisions made, but only for one of the four independent variables. The referred student's sex, socioeconomic status, and physical appearance had no effect on the diagnostic and prognostic decisions made. Reason for referral did significantly affect the decision. Although all assessment data indicated average or normal performance, students referred for behavior problems were significantly more often diagnosed and labeled as emotionally disturbed than were students referred for academic problems. The statement of referral problem biased outcome decisions.

Decision makers perceive different kinds of assessment data as affecting their outcome decisions. Overall, scores on achievement tests, scores on intelligence tests, and the disparity between the two were perceived as most useful and influential. However, scores on personality tests and behavioral recording data were perceived as having a greater influence on outcome decisions when the referred student demonstrated behavior problems than when he or she demonstrated academic problems.

Decision makers did perceive naturally occurring pupil characteristics as influencing the decisions they made. Specifically, socioeconomic status was said to influence decisions more when the student was from a high than from a low socioeconomic environment. Secondly, sex, socioeconomic status, and reason for referral were said to have a greater influence on outcome decisions than did physical appearance, but only when the reason for referral was academic in nature. Participants reported that reason for referral has a pronounced effect on outcome decisions, having a significantly greater effect on decisions than did sex, appearance, or socioeconomic status.

Referral information biases the decisions made about students. While there was no difference in the kinds of tests used by decision makers, different outcome decisions were reached under different referral conditions. Furthermore, decision makers perceived different kinds of data and pupil characteristics as having influenced their decisions, and these differences were a function of the referral information.

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Footnote

Bob Algozzine is also Associate Professor of Special Education at the University of Florida, Gainesville.

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Table 1

Frequency and Proportion of Test Usage (by Domain) as a Function of Referral Condition

Conditions	Sex	SES	Problem	Attribute	Intelligence	Achievement	Perceptual Motor	Adaptive Behavior Scales	Behavioral Recordings	Language	Personality	Totals
1	Male	High	Acad.	Attractive	14 .245	19 .333*	6 .105	6 .105	4 .070	0	8 .140	57
2	Male	High	Acad.	Unattractive	15 .230	17 .261*	13 .2	7 .107	4 .061	4 .061	5 .076	65
3	Male	High	Beh.	Attractive	11 .159	18 .260*	5 .072	12 .173	16 .231	3 .043	4 .057	69
4	Male	High	Beh.	Unattractive	10 .172	13 .224*	5 .086	14 .241	10 .172	2 .034	4 .068	58
5	Male	Low	Acad.	Attractive	15 .25*	13 .216	7 .116	7 .116	7 .116	5 .083	6 .10	60
6	Male	Low	Acad.	Unattractive	16 .238	19 .283*	10 .149	10 .149	7 .104	2 .029	3 .044	67
7	Male	Low	Beh.	Attractive	9 .13	15 .217*	12 .173	12 .173	8 .115	6 .086	7 .101	69
8	Male	Low	Beh.	Unattractive	16 .258*	16 .258*	7 .112	9 .145	7 .112	3 .048	4 .064	62
9	Female	High	Acad.	Attractive	17 .246	19 .275*	12 .173	5 .072	6 .086	5 .072	5 .072	69
10	Female	High	Acad.	Unattractive	14 .233	20 .333*	9 .15	5 .083	5 .083	4 .066	3 .05	60
11	Female	High	Beh.	Attractive	13 .2	13 .2	5 .076	15 .23*	10 .153	4 .061	5 .076	65
12	Female	High	Beh.	Unattractive	10 .185	17 .314*	8 .148	7 .129	5 .092	3 .055	4 .074	54
13	Female	Low	Acad.	Attractive	13 .240	19 .351*	7 .129	3 .055	3 .055	2 .037	7 .129	54
14	Female	Low	Acad.	Unattractive	15 .22	23 .338*	14 .205	4 .058	3 .044	3 .044	6 .088	68
15	Female	Low	Beh.	Attractive	11 .174	24 .380*	5 .079	10 .158	4 .063	3 .047	6 .095	63
16	Female	Low	Beh.	Unattractive	10 .135	21 .283*	8 .108	14 .189	10 .135	3 .040	8 .108	74
Actual					209	286	133	140	109	52	85	1014

Note: An asterisk (*) indicates the most frequently used domain of tests in each condition.

Table 2

Means for Influence of Assessment

Data on Outcome Decisions

	Experimental Condition								
	Sex		SES		Attr		Prob.		Overall
Assessment Data	Male	Female	High	Low	Yes	No	Acad.	Beh.	Mean
Intelligence	2.06	1.97	2.11	1.93	2.07	1.96	1.80	2.24	2.02
Achievement	1.71	1.82	1.76	1.78	1.83	1.71	1.69	1.85	1.77
Percept-Motor	2.80	2.90	2.75	2.95	2.90	2.79	2.66	3.04	2.85
Adapt Behavior	2.89	2.96	2.82	3.03	2.86	2.99	3.06	2.78	2.92
Abil-Ach Discrep	2.05	1.94	1.96	2.03	2.06	1.92	1.89	2.10	1.99
Personality	2.70	3.21	2.97	2.94	2.86	3.05	3.26	2.65	2.96
Beh Recordings	2.23	2.61	2.33	2.50	2.40	2.44	2.69	2.14	2.42
Subtest Discrep	2.68	2.63	2.65	2.66	2.78	2.53	2.54	2.77	2.65
Language	3.09	3.27	3.16	3.19	3.01	3.35	3.04	3.32	3.18
Average	2.47	2.59	2.50	2.56	2.53	2.53	2.51	2.54	

Note: 1 = very significant influence, 5 = no influence

Table 3

Means for Influence of Naturally Occurring

Pupil Characteristics

Characteristic	Experimental Condition								
	Sex		SES		Attr.		Prob.		Overall
	Male	Female	High	Low	Yes	No	Acad.	Beh.	Means
Sex	4.19	4.43	4.19	4.43	4.27	4.34	4.29	4.33	4.31
SES	3.73	4.01	3.67	4.08	3.90	3.84	3.75	4.00	3.87
Appearance	4.14	4.01	3.96	4.19	4.10	4.05	4.22	3.92	4.08
Referral Problem	1.83	1.86	1.84	1.84	1.79	1.90	1.73	1.96	1.84
Average	3.47	3.58	3.42	3.64	3.52	3.53	3.50	3.55	

Note: 1 = very significant influence, 5 = no influence

Table 4

Analysis of Variance on Perceived Importance of Naturally-Occurring Pupil Characteristics

Effect	p
Sex	.26
SES	.03*
Attractiveness	.84
Problem Statement	.55

Table 5

Multivariate Analysis of Variance using Wilks Lambda to Test Parallelism Under Academic and Behavioral Referral Conditions

Effect	p
Sex	.288
SES	.203
Attractiveness	.776
Problem Statement	.044

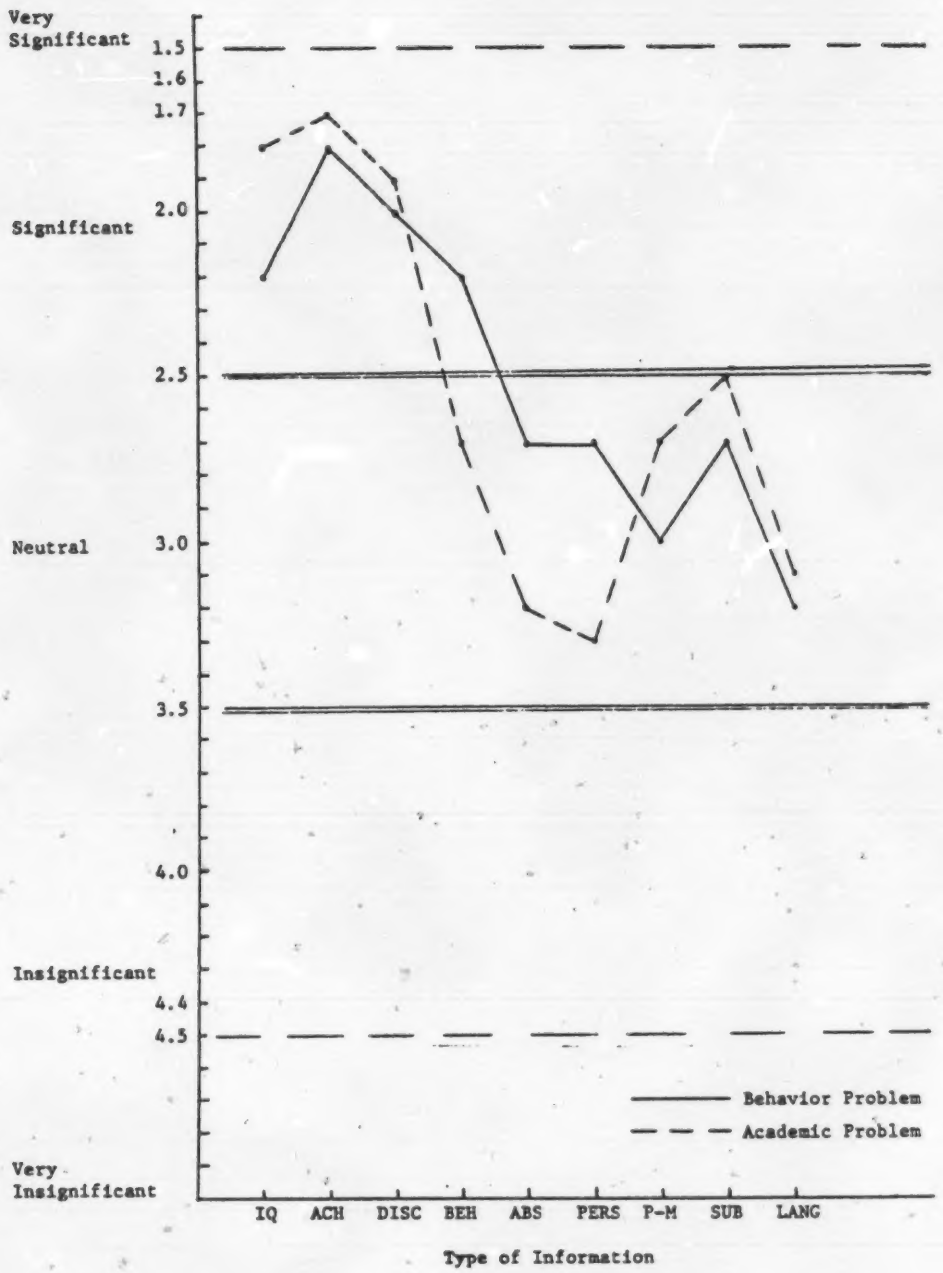

Figure 1. Perceived Influence of Different Kinds of Data when Students were Referred for Different Kinds of Problems.

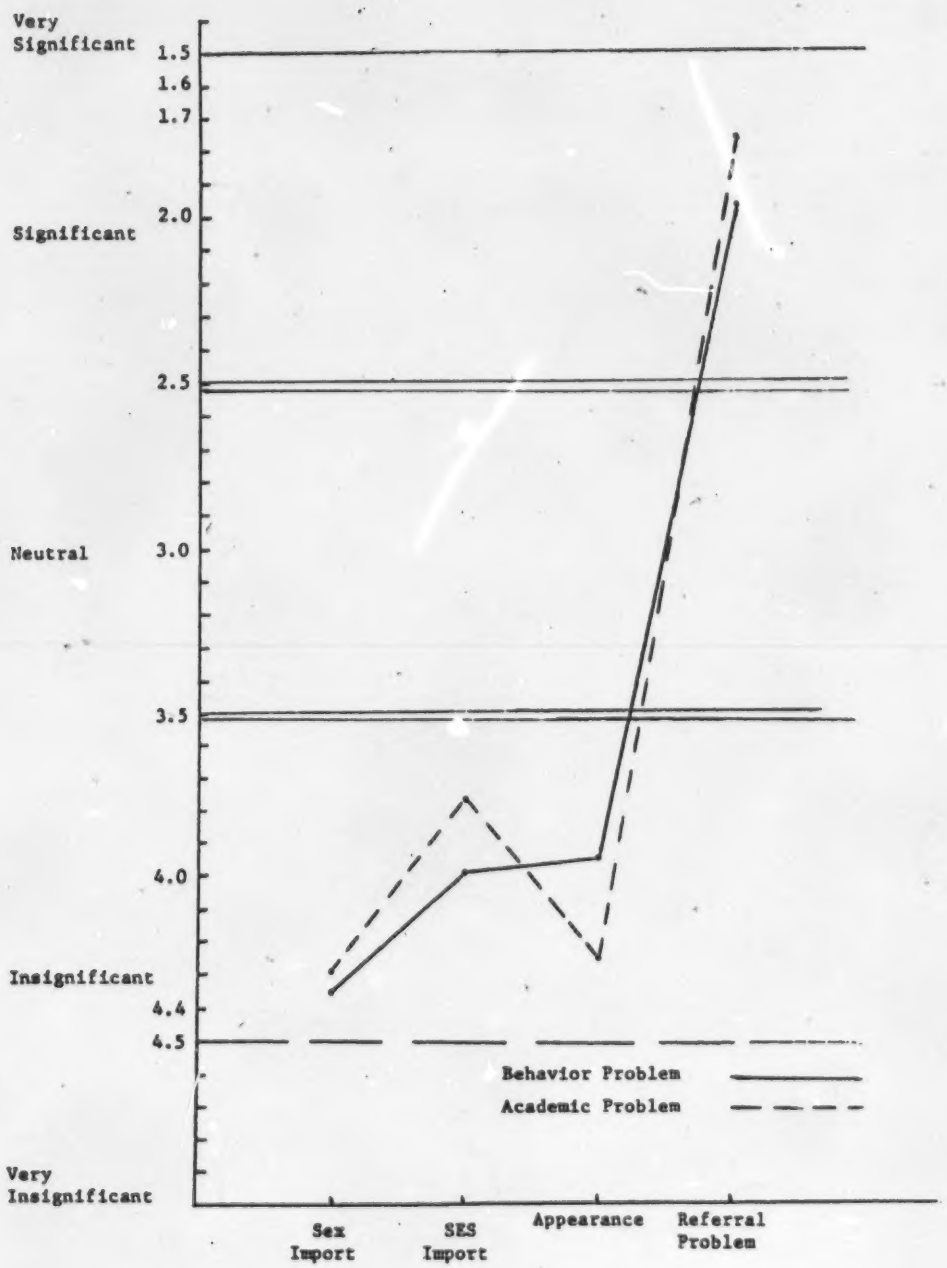

Figure 2. Perceived Influence of Naturally-Occurring Pupil Characteristics for Academic and Behavior Problems.

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